



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
STRATEGIC MONITORING PROGRAM FIELD SHEET

February 2017

PAGE 1 OF

Data Qualified?

Yes / No

STORET Station Name: Sand Creek @ 100m US of CR 415 Date: 03/15/2017

STORET Station ID: G5CE00934 WBID: 2675 Latitude: 29.07290

(Decimal Degrees)

County: Volusia RQ - 2017-01-30-55 ORG ID: 21FLCEN Longitude: -81.06923

(Decimal Degrees)

Receiving Body of Water: Spice Creek Field ID: G5CE00934

Sampling Team Members		WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check	Sampling Equipment				
							☒ Sample Container	☐ Van Dorn	☐ Pole		
							☐ Carboy	☐ Syringe			
							☐ Dipper	☐ Other			
							Equipment ID				
							Collection Method				
							☒ Wading	☐ Via Boat			
							☐ From Shore	☐ Canoe/Kayak			
							☐ Other (note below)	☐ Electric Motor			
								☐ Gasoline Motor			
Water Level: Dry / Pooled / <u>Low</u> / Normal / High / Flooded							Matrix: <u>Fresh</u> / Marine / DI				
Meter ID# <u>Boop / Voh</u> Photos: <u>Yes</u> / No							Tide Falling: Yes / No / <u>NA</u>				
Time Zone	Time	Sample Depth (m)	Total Depth (m)	DO (mg/L)	DO (%SAT)	pH	Salinity (ppt)	Secchi Disk (m)	Sp COND (µmhos/cm)	Temp. (C°)	
EST	13:29	0.1	0.2	6.2	62	6.7	0.2	0.2 (s)	366	14.9	
CEN											

Biological Samples Collected: None HA SCI RPS Algae ID LVS LVI Other

SBIO ID Numbers: SBIO-ID: 77413 RPS-ID: 8626 Macrophyte-ID: 10401 LIMS#: 1880499

Parameter Suite	Parameter Methods	Preservation	Acid Lot#	Expiration	pH Check
Preserved Nutrients	☒ W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP	☒ Ice ☒ H2SO4	<u>6302030</u>	<u>10/28/17</u>	☒ <2
Metals	☐ W-ICPMS ☐ W-ICP	☐ Ice ☐ HNO3			☐ <2
Filtered Nutrients	☒ W-PO4-F ☒ Field Filtered 0.45 µm Filter	☒ Ice			
Chlorophyll	☒ CHLSUITE-W	☒ Ice			
Physical/Aggregate (Fresh)	☒ Alkalinity / W-F / W-TSS / TURBIDITY / W-Cl-IC / W-COLOR / W-SO4-IC / W-TDS	☒ Ice			
Physical/Aggregate (Marine)	☐ Alkalinity / W-F / W-TSS / TURBIDITY	☐ Ice			
Macroinvertebrates	☐ MI-FW-QLDC	☐ Formalin			
Periphyton	☐ ALGAE-ID	☐ Ice			
Microbiology	☐ E Coli ☐ F Coli ☐ Enter ☐ PCR-FILTER	☐ Ice			
Tracers	☐ W-LCMS-DU (1/4 vial fill) ☐ W-UHERB-AA	☐ Ice			
Pesticides	☐ W-PSNP-TQ ☐ W-AHERB-AA ☐ W-PYR-AA-R ☐ W-LCMS-DU (1/4 vial fill) ☐ W-PCL-SQ-R ☐ W-UHERB-AA ☐ W-GLYPH	☐ Ice ☐ Other			

Contains

1:1

Sulfuric Acid

SA-6302030

EXP: 10/28/17

Warning!

See SDS

Sticker(s) Here
(Available)

Notes:

Sand Creek @ 100m
US of CR 415

Date: 03/15/2017
RQ-2017-01-30-55

G5CE00934

Field ID

STORET

G5CE00934

Signature: [Signature]

Date: 3/15/17

Field Parameters Entered into LIMS: MLK 6/8/17

Field Parameters QC in LIMS: LMJ 6/15/17

Date Migrated to STORET: LMJ 6/15/17

Field Sheets Scanned/Saved: [Signature]

DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID 77413 ORG ID 21FLCEN LATITUDE 29.0729
 COUNTY Volusia STORET # 65CE00934 LONGITUDE -81.06923
 DATE 3/15/17 TIME _____ SAMPLING AGENCY FDEP-CEROC
 SITE NAME Sand Creek @ 100m US of CR 415
 FIELD ID/NAME 65CE00934 RECEIVING BODY OF WATER Spruce Crk

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural <u>80</u> Silviculture _____ Field/Pasture <u>5</u> Agricultural <u>10</u> Residential <u>5</u> Commercial _____ Industry _____ Other (Specify) _____								Landscape Development Intensity Index (LDI) _____	
Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy						Typical Width (m) Depth (m)/Velocity (m/sec) Transect _____ m wide _____ m/s <u>.06</u> m/s _____ m/s _____ m deep <u>.14</u> m deep _____ m deep			
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: <u>>18</u> Right Bank: <u>>18</u>				Hydrologic Modification Score (per FT 3101) _____					
High Water Mark: <u>.3</u> + <u>.14</u> = <u>.44</u> (m) (above present water level) (present depth) (above bed)				Artificially Impounded ☐ Yes ☒ No					
Artificially ☒ No ☐ Mostly recovered, more sinuous Channelized: ☐ Some recovery ☐ Recent, severe				Canopy Cover % ☐ Open ☐ Lightly Shaded (11-45%) ☐ Heavily Shaded ☒ Moderate Shaded (46-80%)					

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse			Sediment Odors <u>Type: Sand/silt</u> ☒ Normal ☐ Sew age ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify): _____			Smothering of Substrates Sand Smothering: None ☒ Slight ☐ Moderate ☐ Severe ☐ Silt Smothering: None ☐ Slight ☐ Moderate ☒ Severe ☐ Algae Smothering: None ☐ Slight ☒ Moderate ☐ Severe ☐		
SUBSTRATE TYPE Assessment Tool: ☐ SCI ☒ RPS ☐ LVS ☐ LCI ☐ BioRecon % Coverage INVERT # Times Sampled PERI # Times Sampled Woody Debris (Snags) _____ Undercut Banks / Roots _____ Leaf Packs or Mat _____ Aquatic Vegetation _____ Rock or Shell Rubble _____ Sand _____ Mud / Muck / Silt _____ Other _____ Other _____			WATER QUALITY Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) D.O. Sat (%) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M) Top: <u>.1</u> <u>14.9</u> <u>6.7</u> <u>6.2</u> <u>62</u> <u>366</u> <u>0.2</u> <u>.2</u> Mid: _____ Bottom: _____ Meter ID: <u>BOOP/Non</u> Water Odors Normal ☒ Petroleum ☐ Sew age ☐ Chemical ☐ Other ☐ Water Sample Taken? ☒ Yes ☐ No Sample Preserved? ☒ Yes ☐ No Lot Number: <u>6302030</u> Exp: <u>10/23/17</u> Algae Sample Taken? ☒ Yes ☐ No Sample Preserved? ☒ Yes ☐ No Lot Number: <u>ICE</u> Exp: _____ System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) _____					
ABUNDANCE Not Obs. Rare Common Abundant Periphyton: ☐ ☐ ☒ ☐ Fish: ☐ ☐ ☐ ☒ Aquatic Plants: ☐ ☒ ☐ ☐ Iron/Sulfur Bacteria: ☐ ☒ ☐ ☐			Water Surface Oils Normal ☒ Sheen ☐ Globs ☐ Slick ☐ Other ☐ Color Tannic ☒ Green (Algae) ☐ Clear ☐ Other (Specify) _____ Clarity Clear ☐ Slightly Turbid ☒ Turbid ☐ Opaque ☐			AMBIENT FIELD CONDITIONS / NOTES: <u>Low 70's, windy, clear</u> ☒ The antecedent hydrologic conditions have been met to my best know ledge.		
SAMPLING TEAM <u>Mike Linger / Mike Drennan</u>			SIGNATURE: <u>[Signature]</u>			DATE: <u>3/15/17</u>		

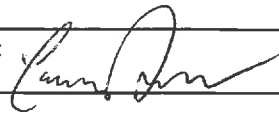
DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

SAMPLING AGENCY: FDEP-CEROC		STORET STATION NUMBER: GSCE00934	DATE (MM/DD/YY): 3/15/17	RECEIVING BODY OF WATER: Spruce Crk.
REMARKS:	COUNTY: Volusia	LOCATION: Sand Crk @ 100m US of CR 415	FIELD ID/NAME: GSCE00934	

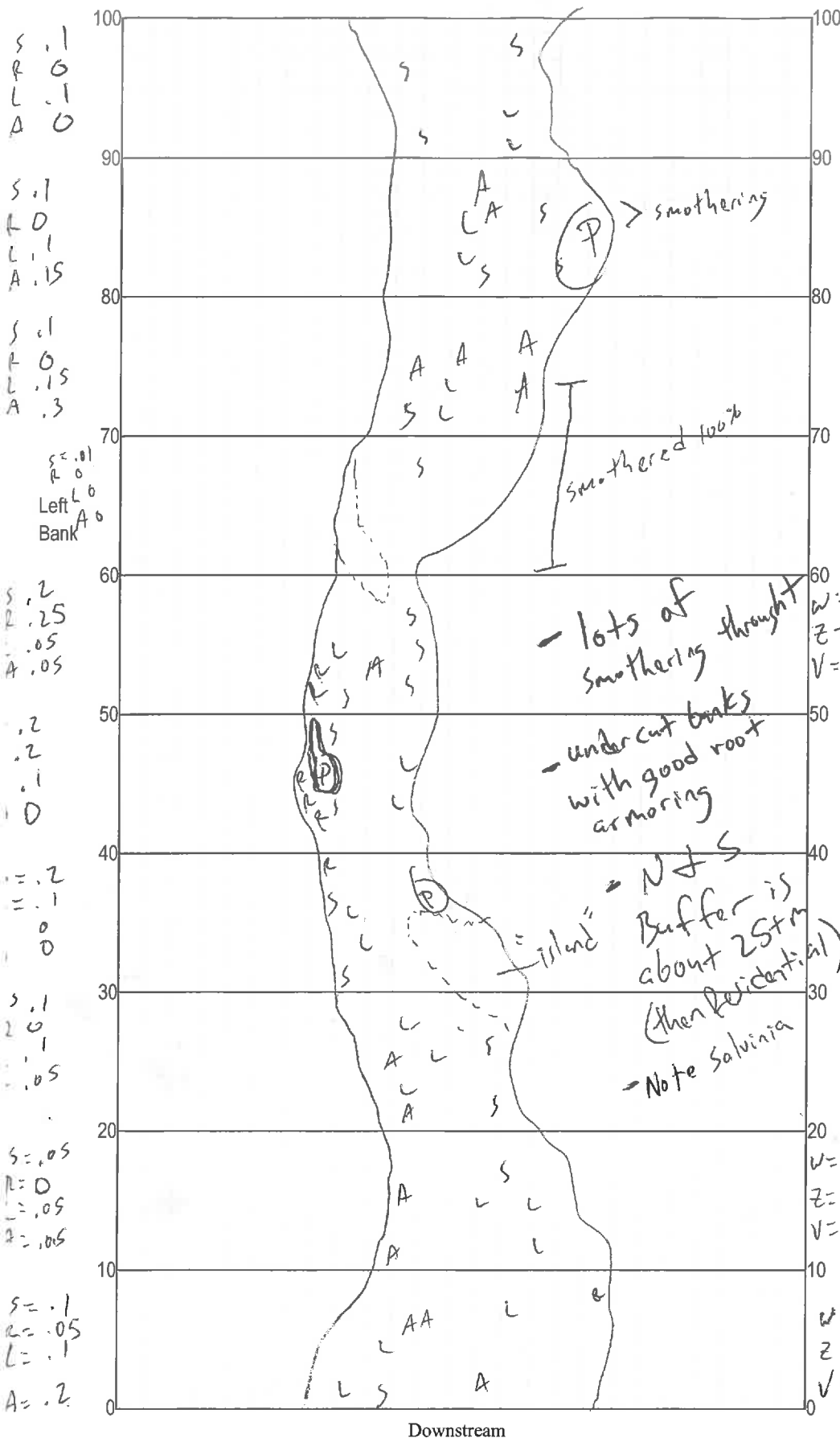
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>3</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>2</u>	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>7</u>	Max. observed at typical transect > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 19 18 17 16	Max. observed at typical transect >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>7</u> ----- Primary Score <u>19</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks.	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered.	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area.	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks.
Artificial Channelization <u>17</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>7</u> Left Bank <u>6</u> <u>13</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>9</u> Left Bank <u>9</u> <u>18</u>	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>9</u> Left Bank <u>9</u> <u>18</u> ----- Secondary Score <u>66</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

85

TOTAL SCORE

Date: <u>3/15/17</u>	Analyst: <u>Mike Drennan</u>	Signature: 
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DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet



Location: Sand Creek @ 100m
US of CR 415
 Date: 3/15/17
 Sampler: Mike Drennan

100 m: Latitude 29.0726
 Longitude -81.0696
 0 m: Latitude 29.0727
 Longitude -81.0686

Substrates: Code key, draw proportionate habitat abundance.	%	of total
<u>S</u> Snags	<u>35</u>	<u>.64</u>
<u>R</u> Roots/undercut banks	<u>18</u>	<u>.32</u>
<u>L</u> Leaf Packs (or mats)	<u>23</u>	<u>.42</u>
<u>A</u> Aquatic Macrophytes	<u>24</u>	<u>.44</u>
<u>P</u> Pools	total # observed = <u>3</u> # range expected = <u>4-9</u>	

Average width 1.8 m
 Average depth .14 m

Velocity measured at 5, 15, 55 meter mark.

WQ & chemistry taken at 0 meter mark.

Habitat Smothering:
 Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
 Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
 Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

- Good canopy / old growth:
 - Nyssa, Black oak, cypress, etc...
 - Understory dominated by Sere noa repens & Sabal minor
 - surrounding forest is mesic hammock

BF = .3 m above H₂O
 BH = 1.1 m
 W = 1.8 m
 Z = .12
 V = .06 m/s

Length of grid represents 100 m of stream (not linear meters).
 (Horizontal scale is double vertical scale, draw proportionately).
 S = 1.16
 R = .60
 L = .75
 A = .80
 3.31 / 180 = .0184
 ~ 1.84%

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Sand Creek @ 100m US of CR 415 County: Volusia Date: 3/15/17 Investigators: Mike Litz

Transect (m) Point 1=right 9=left Algal Thickness Rank (N-6, X) Estimated Canopy Cover

STORET Station Number: 05CE00984

0	1	N			60	1	3			
	2	N				2	4			
	3	N				3	4			
	4	N				4	4			
	5	N				5	4			
	6	N				6	3			
	7	N				7	4			
	8	N				8	3			
	9	N				9	3			

Secchi depth 0.2 (s)
Estimated?

points ranked 4-6 31
total points assessed 99
% points ranked 4-6 31%

10	1	3			70	1	3			
	2	4				2	4			
	3	4				3	5			
	4	3				4	5			
	5	N				5	4			
	6	3				6	3			
	7	4				7	4			
	8	4				8	3			
	9	3				9	3			

Check accompanying data collected at same site/date.
Algal mat sample ☒
Linear Veg Survey ☒
Habitat Assessment ☒
SCI/Biorecon ☐
Water sample ☒
RQ- 2017-01-30-55

20	1	3			80	1	N			
	2	3				2	3			
	3	4				3	3			
	4	3				4	4			
	5	4				5	4			
	6	3				6	4			
	7	3				7	3			
	8	N				8	3			
	9	N				9	N			

Algal Thickness Rank	
N	rough, no algae, slimy, algae up to 1mm
3	>1mm - 6mm
4	>6mm - 20mm
5	>20mm - 10 cm
6	>10 cm

30	1	N			90	1	3			
	2	N				2	N			
	3	3				3	3			
	4	3				4	4			
	5	3				5	4			
	6	3				6	3			
	7	N				7	N			
	8	N				8	N			
	9	N				9	N			

40	1	3			100	1	N			
	2	3				2	3			
	3	4				3	N			
	4	4				4	4			
	5	4				5	4			
	6	4				6	N			
	7	3				7	3			
	8	3				8	3			
	9	N				9	N			

50	1	N			80	1	N			
	2	3				2	3			
	3	3				3	3			
	4	4				4	4			
	5	4				5	4			
	6	4				6	N			
	7	N				7	3			
	8	3				8	3			
	9	3				9	N			

Record "N" and check "Estimated" for points deeper than the Secchi depth; algae are presumed absent. Check "Estimated" if thickness estimated for deep points which can be seen but not reached.
Record "X" for points shallower than Secchi depth for which substrate cannot be seen or reached with the hand. No estimated rank.
Record canopy cover as the number of small densiometer quadrants (out of 96) that HAVE canopy cover. Measure facing upstream at point 4, 5, or 6.
Collect algal mat sample following DEP SOP FS 7240 if the percentage of total sampled points with a thickness rank of 4, 5, or 6 is >20%.

Waterbody: Sand Creek @ 100m US of CR 415		Date: 3/15/17		County: Volusia		Storet Number: 65CE00934																	
Analyst: Mike Linger				Signature: <i>Mike Linger</i>																			
Comments:																							
Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1 m ² of taxa present). Note in the boxes below if no dominant are selected, and note total macrophyte abundance rank for each section. Only the most common taxa are listed, so use blank spaces for additional taxa names.																							
HERBACEOUS SPECIES	Meter Mark										Specimen collected (check)	HERBACEOUS SPECIES	Meter Mark										Specimen collected (check)
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100			0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	
Alternanthera philoxeroides												Micranthemum glomeratum											
Bacopa caroliniana												Micranthemum umbrosum											
Bacopa monnieri												Myriophyllum aquaticum											
Bidens mitis												Najas guadelupensis											
Boehmeria cylindrica												Nuphar luteum											
Centella asiatica												Orontium aquaticum											
Ceratophyllum demersum												Panicum hemitomon											
Chara												Panicum repens											
Cicuta maculata												Panicum rigidulum											
Cladium jamaicense												Pistia stratioides											
Colocasia esculenta												Polygonum glabra											
Commelina diffusa	✓	✓	✓	✓	✓		✓		✓	✓		Polygonum hydropiperoides											
Commelina virginica												Polygonum punctatum	sp	✓			✓		✓				
Crinum americanum												Pontedaria cordata											
Diodia virginiana												Potamogeton illinoensis											
Eichhornia crassipes												Ruellia simplex											
Eleocharis (wispy viviparous)												Sacciolepis striata											
Hydrilla verticillata												Sagittaria kurziana											
Hydrocotyle												Sagittaria lancifolia											
Hygrophila polysperma												Sagittaria latifolia											
Hymenocallis												Salvinia minima		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lachnanthes caroliniana												Samolus parviflora											
Landoltia punctata												Saururus cernuus			✓		✓						
Lemna												Sparganium americanum											
Limnophila sessiflora												Typha											
Ludwigia leptocarpa												Vallisneria americana											
Ludwigia palustris												Zizania aquatica											
Ludwigia peruviana																							
Ludwigia repens	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓													
Luziola fluitans					✓	✓																	
Limnium spongia				✓	✓			✓	</														